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Water is China's Greatest Weapon and its Achilles Heel

By **Jack Silvers** October 16, 2020

When it comes to flood myths, China's is not as well known as Noah's Ark, but just as influential. Legend says that four millennia ago, the Yellow and Yangtze rivers frequently flooded, with devastating consequences for the ancient Chinese. However, salvation arrived when a distant relative of the emperor, Yu, united the region's disparate tribes, constructed a revolutionary irrigation system, and conquered the floodwaters. Yu then ascended to the role of emperor himself on the strength of his water taming prowess.

Now, as China continues its Yu-like ascent to global power, it is once again dealing with issues of the liquid variety. This year, central and southern China have been ravaged by flooding that has displaced millions and caused at least $26 billion in damage. At the same time, the Chinese government has long battled against water scarcity: nearly 1 out of 5 people in the world live in China, yet only 6% of the Earth's freshwater lies within the country's borders. China is far from alone in its predicament; the UN estimates that water scarcity affects 40% of the global population. Dr. Marlos de Souza, the coordinator of the UN-Water Expert Group on Water Scarcity, told the HPR that water scarcity is being driven by more than simply drought, but by a complex array of environmental and economic factors.

Yet even in a warming and drying world, China might have the upper hand: It sits on the source of 10 major rivers, which aggregately flow through 11 countries and supply 1.6 billion people with water. China controls Tibet and the Tibetan Plateau, otherwise known as the world's "Third Pole" because its glaciers give birth to the lion's share of Asia's rivers. Therefore, China's upstream actions — for instance, its dam-building — have scores of impacts for downstream countries. Dechen Palmo, a research fellow at the Tibet Policy Institute, was not exaggerating when he wrote in The Diplomat that "the future of Asia's water lies in China's hands."

Palmo's warning and recent flooding shed light on China's enigmatic relationship with water. Xi Jinping's superpower could likely cut off much of Southeast Asia's access to water if it desired, but could also succumb to its own water woes. How China manages its liquid gold will not only affect its own fate but the fate of hundreds of millions of thirsty citizens across the continent.

China Controls the Flood

Countries have fought over water for centuries. But today, strains on the global water supply portend an increased likelihood of "water wars" which would be much more deadly than the battles of old. A report from the European Commission's Joint Research Centre pointed to several hotspots where "hydro-political" tensions could spark a military encounter. These include the Ganges-Brahmaputra, one of the five most vulnerable transboundary water spots.

The Brahmaputra begins in southern China and drains into India and Bangladesh, supplying water for millions of citizens along its 2,000-mile path. India relies on the river to nourish residents of growing megacities, while Bangladesh is almost entirely dependent on the Brahmaputra and other transboundary rivers for its overall water supply. Still, China, as the upper country, has plunged ahead with hydropower ventures that have forced its downstream neighbors to adapt.

China's first foray into damming the Brahmaputra came in 2010, when it began constructing a dam in Zangmu, Tibet. In 2013, the Chinese government announced plans to build three more mid-size dams on the river. Because India and China have no shared water treaty, then Indian Prime Minister Manmohan Singh could only press China to make its dams "run-of-the-river" projects that would only store water for power generation. With the Zangmu plant operational since 2015 and construction on the next three dams ongoing, Chinese reassurances seem to have mollified Indian officials for now. But another Asian river, the Mekong, illustrates the danger of giving Chinese hydro engineers the benefit of the doubt.

The Mekong starts high up in the Tibetan plateau and ends at the South China Sea, feeding into the huge Tonle Sap lake on the way. In an interview with the HPR, Brian Eyler, a Mekong expert at the Stimson Center, described the unique nature of the Tonle Sap, which swells during the wet season to five times its normal area then contracts during the dry season. "It kind of works like a heartbeat that pushes the blood of the Mekong through the system," said Eyler. The river and its lake support the food supply of Cambodia and Vietnam, the fishing industry of Thailand, and the hydropower trade of Laos. These vital economic activities depend on a steady and predictable upstream flow, which in recent years has no longer been a guarantee.

The Mekong, or Lancang in China, has been the site of dam construction in China's Yunnan province since the 1990s. In the past decade, however, China has accelerated dam development. The Xiaowan dam, completed in 2011, features a retaining wall almost as high as the Eiffel Tower; alongside the similarly massive Nuozhadu dam, the two could submerge all of London beneath 24 metres of water. Xiaowan and Nuozhadu are two of 11 Chinese dams on the upper Mekong, a recipe for disaster in the eyes of many. This disaster has frequently come in the form of drought, and new research suggests that Chinese hydropower plays a pivotal role.

Upstream dam construction presents an array of concerns for downstream countries, most notably decreased flows of water downstream. Along the Mekong, this concern was validated by a study released in April by Eyes on Earth, a water monitoring outfit. The study used satellite data to predict the natural, unimpeded flow of the river, then compared this model to actual river height data from a gauge in Thailand. After 2012, when the Xiaowan dam was completed, the authors documented a divergence between the predicted flow of the river and gauge data. In 2019, the divergence was magnified: Although the river model predicted above-average flows during the annual wet season, the Lower Mekong experienced some of its lowest-ever river levels. Alan Basist, an author of the paper, told the HPR that "The natural rhythm of the river was not any different in 2019 than in the other years. Yet the water received downstream was a small percentage of what it should have been."

The effects of the 2019 drought in Lower Mekong countries were devastating, and they offer a stark warning of how Chinese dams can exacerbate droughts. Fishing communities along the Tonle Sap in Cambodia reported catches 80% down from the previous years. This loss represents more than an economic blow: Cambodians rely on fish to produce prahok, a staple protein that anchors the Cambodian diet. In other areas, such as Vietnamese cities along the Mekong Delta, the holding back of water in Chinese reservoirs equated to the complete loss of freshwater access. As Eyler put it, "The entire heartbeat process of the river is just weakened and undermined by what man is doing to the river system by building dams." Ironically, the same engineers responsible for this disruption have been toiling away for decades to provide clean water for their own country.

There's Something in the Water

Nourishing China's 1.4 billion citizens is no easy feat, but the government has made major strides since the turn of the century. Between 2000 and 2019, the number of Chinese who relied on untreated sources

for drinking water dropped by 150 million. This drop can largely be attributed to the herculean poverty reduction efforts undertaken by Chinese brass. However, China's rapid industrialization and urbanization have eased the problem of water scarcity while exacerbating water pollution.

The gravity of this issue was not lost on Xi Jinping in 2013 when he remarked that "the standard that internet users apply for lake water quality is whether the mayor dares to jump in and swim." Shortly before Xi's comments, the residents of Shanghai had just finished fishing 16,000 dead pigs out of the nearby Huangpu River. An estimated 70% of China's rivers and lakes are polluted, helping to explain why more than a quarter of China's surface water is unfit for human consumption. Persistent pollution of this type does not only reduce the amount of available drinking water, but can also have serious health consequences.

Luckily, Xi's jokes gave way to concrete action to clean up China's muddy waterways. In 2015, his government launched the Water Pollution Prevention and Control Action Plan, which sets water quality targets to be met by 2030. This plan opened the floodgates for a flurry of government spending on clean-up projects, including $100.2 billion of investment in nearly 8,000 projects in just the first half of 2017 alone. In an interview with the HPR, Dr. Junjie Zhang, an environmental economist at Duke Kunshan University in China, added that "Since 2013, China has had very tight control over the water pollution problem, and many of the pollutants have peaked." While some types of pollution remain stagnant, the government can at least claim that water pollution is a priority.

Water scarcity promises to be less easily remedied. This issue is one that exploits China's regional disparities in resources: Half of the country's population lives in 15 northern provinces which contain only 20% of the country's freshwater resources. Eight of the nine provinces that suffer from absolute water scarcity are in the north, leading the government to attempt a massive diversion of water from the south to the north. Officially dubbed the South-to-North Water Diversion project, the phalanx of canals and pipelines represents the largest and most expensive Chinese infrastructure project since 1949. The project's apparent success in delivering water to Beijing has been celebrated by Chinese leadership.

In reality, the diversion project has deepened a schism between those who favor active water distribution efforts and those arguing for furthering water conservation. While some hydro-specialists support the diversion project, others question the utility of the project. A 2015 commentary in the journal Nature explored a number of ways that northern China could meet its water needs without leeching off the south, from wastewater recycling to improvements in irrigation infrastructure. Such an approach might avert the considerable environmental and social impacts of the central government's projects, helping people like Zhao Keqian, who was forced to abandon his home due to the diversion scheme. Zhao captured the disillusionment of southern province residents when he told The Economist that "The government doesn't care about us."

To deliver equitable water access across the country, China may need to think locally. Zhang told the HPR that a shift has begun: "Water recycling in urban areas has been discussed in China for more than two decades. Now, it is growing." Still, climate change will decrease the available water supply even further

while increasing the frequency of extreme weather events. Meanwhile, as cities continue to grow in population, regional disparities will continue to grow. These factors may compel the government to seek international input on its water problems.

Passing Around the Cup

The existing mechanisms for international dialogue are headlined by UN-Water, a collaboration platform uniting UN agencies and governmental partners. Its biggest achievement to date on water cooperation is the UN Watercourses Convention, which entered into force in 2014 and codifies principles of equitable water utilization, transboundary cooperation, and pollution prevention. De Souza equated the convention's modus operandi with that of the UN as a whole, saying "It's based on collaboration, and litigation is the last resort to be used." Collaboration, however, fails when countries don't show up to the table. As of now, China has not joined the convention, representing a key blow to the UN's efforts.

China has taken more of an active stance in regional water dialogues, however. The Mekong River Commission facilitates regional diplomacy between Mekong countries. China is a dialogue member and shares its river data with the MRC only during the wet season. Dr. Anoulak Kittikhoun, Chief Strategy and Partnership Officer of the MRC, told the HPR that "The flood season data are good enough for our flood forecasting, but not good enough for basin management and planning." Recently, China pledged to expand its data sharing with the MRC and build a new information-sharing platform under the auspices of the Lancang-Mekong Cooperation, another regional association of riparian countries with an entirely Chinese leadership structure. On data sharing and other issues, the LMC gives China the opportunity to dominate the discussion.

Expecting a radical change in Chinese actions towards the Mekong or other shared rivers ignores the country's history. The trauma of past flooding informs China's attempts to out-engineer nature, while its longtime struggle with water scarcity leads its leader to view water as a sovereign resource rather than a shared one. Perhaps, Xi's leadership cadre will choose to engage with international dialogue on water issues — a prospect that many countries, including the U.S., would be wise to welcome. Until then, it's up to Xi to either embrace Emperor Yu's legacy of cooperation or continue to independently struggle against a tidal wave of challenges.

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